Recent Improvements in the Operative Treatment of Vesico-Vaginal Fistula. By J. Clarence Webster, B.A., M.D., F.R.C.P.Ed.

For many years the operative methods employed for the closure of vesico-vaginal fistula have been based upon the principles laid down by Marion Sims, *i.e.* free paring of the edges of the fistula, and adaptation of the raw surfaces by means of sutures. Sims was not the first to suggest this method. It is certain that it was recommended by Van Roonhuysen[1] of Holland, in the seventeenth century, and that Fatio[2] of Basel and others employed it successfully in the eighteenth century.

In the early part of the present century, Hayward[3] of Boston, U.S.A., pointed out the necessity of making a large raw surface, while Mettaner[4] of Virginia advocated the use of the silver suture.

It is, however, to Marion Sims, and, later, to Simon, that we are mainly indebted for the elaboration of the operation, and for the demonstration of its superiority over the other methods of treatment. They have, indeed, made universal the plastic operation as the only reliable means of treating fistulæ. Yet, important as the results of their methods have been, there can be no doubt that better results can be obtained by the employment of certain modifications, both in regard to the manner of preparing the raw surfaces, and of uniting them.

Sims and Simon recommended that the edges of the fistula should be pared by the removal of a strip of tissue, extending from the vaginal to the vesical mucosa. The former pared the edges by a sloping incision, which did not divide the latter,

[1] *Trans. Philos. Soc. London*, vol. xi. p. 621.
[2] Pozzi, "Traité d. Gyn." Paris, 1890, p. 904.
[3] *Boston Med. and S. Journ.*, 1831.
[4] Folten, *Arch. gén. de méd.*, Paris, 1860, V. Série, tome xv. p. 459.

but passed close to it. Simon made an incision less sloping, which did not specially avoid the vesical mucosa.

The improvements upon these methods which are to be

Sims' operation.

Simon's operation.

FIG. 1.

recommended may be best considered in relation to the following varieties of fistula, classified according to size:—

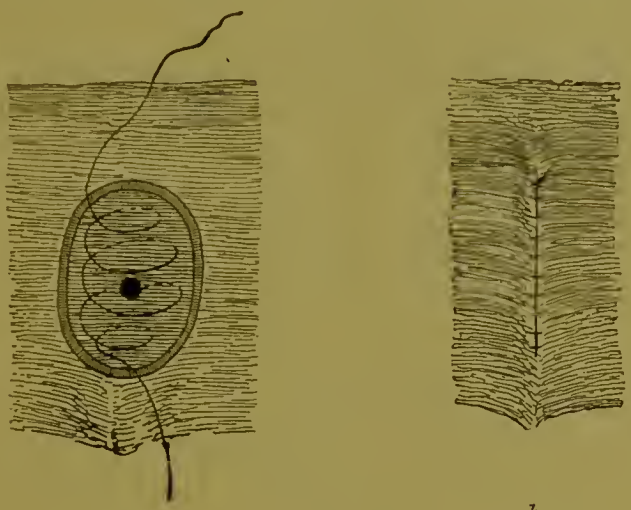
1. Very small.
2. Small or medium.
3. Large.
4. Very large.
   - *a.* With lower edge not cicatrised close to pubes.
   - *b.* With lower edge cicatrised close to pubes.
5. Utero-vesico-vaginal.
6. Utero-vesical.

1. *Very small fistulæ, i.e.* those through which only a probe or sound may be passed.

In these cases it is entirely unnecessary to employ the Sims or Simon method. The following plan is more easily carried out, and is thoroughly effective.

The patient is placed in the lithotomy position. The cervix uteri is drawn down, and the anterior vaginal wall exposed, as in the operation of anterior colporrhaphy.

Dissect a small oval flap of vaginal mucosa, $\frac{1}{2}$ in. or $\frac{3}{4}$ in. in diameter, from the anterior wall of the vagina, the fistula being in the centre of the flap.



a. *b.*

FIG. 2.

a. Raw surface with fistula in its centre, and first stage of continuous suture.

b. Appearance of vaginal wall after closure of raw surface.

Then, with a continuous catgut suture, applied in two or three stages, close the raw surface until only a longitudinal wound is left. In this way the fistula is covered by a thick mass of vaginal tissue.

2. *Small or medium-sized fistulæ*, in which there has been no loss of tissue, and whose edges may be approximated fairly closely.

Here it is not a good principle to remove a strip of tissue, as recommended by Sims and Simon. Every gynecologist has had experience of ill-success by the use of their methods in these cases. Sometimes this is due to too great tension on the stitches. Sometimes, in fear of this danger, too small an amount of tissue is removed, so that either non-union or only partial union results. In successive attempts, new raw surfaces are obtained only by renewed paring of the edges. Such cases may require five, six, or more operations before permanent cure can be effected.

There can be no doubt that the method of denudation by removal of tissue is bad in these cases. Just as in the operation for perineal repair, this principle has been displaced by the flap operations of Lawson Tait and A. R. Simpson, so the Sims and Simon methods must be abandoned, in the cases of vesico-vaginal fistula now under consideration, for the flap-method introduced by Walcher,[1] called by the French *autoplastie par dédoublement.*

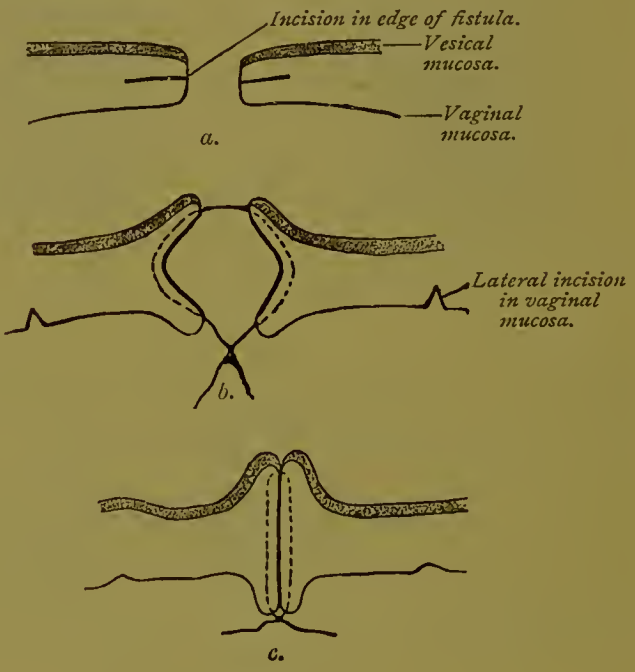


FIG. 3.

a. Edge of fistula with incision.
b. Flaps separated and suture passed.
c. Raw surface of flaps approximated.

The operation should be performed as follows:—The patient is placed in the lithotomy position, the anterior vaginal wall being exposed in the ordinary manner, and steadied with forceps applied near the fistula. The edge of the fistula is then divided to the depth of ¼ in. or thereabouts, so that a vaginal and a vesical flap are formed. In the operation originally described by Walcher, this was preceded by the removal of a thin strip of tissue from the extreme edge of the fistula.

[1] *Centralbl. f. Gynäk.*, Leipzig, 1889, No. 1.

Winckel,[1] however, in an important paper, which he published in 1891, highly recommending this new method, showed that such a step was unnecessary. If the vesical flap be now pushed inwards, and the vaginal flap pulled outwards, it will be seen that a large raw surface exists all around the fistula. Sutures are now applied. Walcher brought the vesical flaps together with catgut, and the vaginal flaps with silk. This is not necessary. Catgut alone may be employed either by the continuous method or by separate sutures. In either case a deep series should be first passed, each one entering the raw tissue just inside the edge of the vaginal mucosa, and emerging close to the vesical mucosa. Afterwards a superficial set should be used to close the edges of the vaginal mucosa.

In certain cases, if it be feared that the tension of the stitches is excessive, a simple means of relieving it may be adopted. Before the sutures are applied, a longitudinal incision $\frac{1}{2}$ in. or $\frac{3}{4}$ in. in length may be made through the mucosa of the anterior vaginal wall, somewhere near the outer border of the wall. As a result of this incision, the vaginal flaps at the edge of the fistula may be more readily approximated. This may be carried out on both sides, if necessary.

After the closure of the fistula, these lateral incisions, which have been made to gape, may be closed more or less thoroughly, the sutures being passed at right angles to the original incision.

3. *Large fistulæ*, in which there has been some loss of tissue.

When the fistula is large, and its edges cannot be approximated owing to the loss of tissue which has occurred, it is useless to attempt its closure by the Sims method or even by *dédoublement*.

For such cases the following method may be tried. It has been described by Professor Ferguson of Chicago, in the *American Journal of Obstetrics* for April 1895. It was, however, first employed and recommended by Martin of Berlin

[1] *München. med. Wchnschr.*, 1891, No. 31. In the *Ztschr. f. Geburtsh. u. Gynäk.*, Stuttgart, bd. xxx. heft 2, Winckel has again insisted upon the importance of this flap-method.

in 1891. The operation is based upon Volkmann's procedure in ectopia vesicæ.

The patient is placed in the lithotomy position. The anterior wall is well exposed, and held with three or four pairs of forceps. An incision is made through the vaginal mucosa around the fistula, at a distance from its edge of little more than half the average transverse diameter of the opening.

This flap is then dissected almost to the edge of the fistula, and is then turned inwards so as to bridge across the opening.

It is thus evident that the vaginal surface of the flap has been turned towards the bladder, while a considerable raw surface looks towards the vagina, part of which belongs to the flap, part to the vaginal wall from which it was dissected. The edges of the flap are next brought together with catgut, and the whole raw surface is closed as much as possible with continuous catgut suture, just as in the operation of colporrhaphy.

If necessary, the lateral incisions recommended in the last-described operation may be made, in order to allow of the approximation of the edges of the wound with as little tension as possible.

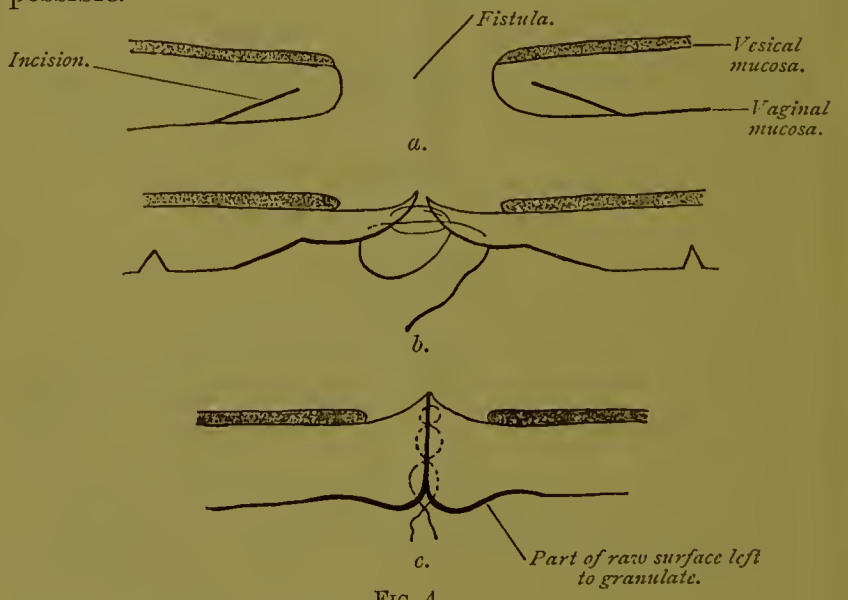


FIG. 4.

a. Incision around fistula.
b. Flap turned inwards and suture introduced.
c. Raw surfaces of flap approximated by means of suture.

If the raw surface be too large to allow of complete closure,

the vaginal edges of the wound may be left unstitched, in order to heal by granulation.

By this method it is seen that the turned-in surface of the vaginal flap becomes the inner surface of the restored bladder-base.

If this method should not be completely successful after one operation, any fistulous tract remaining can be closed by subsequent plastic procedure.

4. *Very large fistulæ*.[1]—(*a*) Those in which the lower edge of the fistula has not been cicatrised close to the pubic bone.

For such cases there can be no doubt as to the superiority of Mackenrodt's[2] method. This is as follows:—

After fixing the cervix and anterior vaginal wall with forceps, a mesial longitudinal incision is made through the base of the bladder and the vaginal wall at the lower and upper parts of the fistula, which is thereby made continuous with the incisions. In this way the bladder is opened from cervix to urethra. The edge of the whole opening is then split, so that the bladder is thereby separated from the vagina for a short extent around the edge.

The bladder is also separated from the cervix for a considerable distance from the upper end of the incision. In this way it is made possible to bring the edges of the bladder-wall into apposition at the fistula. These are next united by a series of catgut sutures, extending from the cervix to the urethra. Afterwards, the vaginal flaps of the fistulous margin are sutured. If there be any difficulty in carrying out the closure of the latter at the upper angle of the wound, the cervix may be drawn down and the vaginal flaps stitched to its posterior rawed surface.

[1] Other methods of treating these fistulæ are not to be recommended. I refer to such as the following:—Trendelenburg (*Deutsche med. Wchnschr.*, Leipzig, 1892, No. 23, s. 518) opened into the bladder extra-peritoneally from above, cutting through the abdominal wall close to the upper margin of the symphysis. Wiehkoff (*Wien. klin. Wchnschr.*, 1893, No. 11, s. 195) tried the same plan, performing symphisiotomy in addition; the latter procedure gave no advantage, scarcely any separation of the bones being obtainable. Dittel (*Wien. klin. Wchnschr.*, 1893, No. 25, s. 448) performed a laparotomy, separating the cervix from the bladder, and then closing the fistula.

[2] *Centralbl. f. Gynäk.*, Leipzig.

(*b*) Those in which the lower edge of the fistula is cicatrised close to the pubes.

For these the method advocated by Schauta[1] is the best yet devised. A vertical incision is made through the labium major on the side on which the cicatrisation exists. It is carried deeply as far as the ramus. Then, with the finger and a spatula, the vaginal wall along the cicatrised edge of the fistula is separated from the bone. The wound is then stuffed with gauze, while the edges of the fistula, which are now easily brought together, are rawed and closed. Afterwards, the outer wound is closed.

5. *Utero-vesico-vaginal fistulæ*, those in which at the apex of a tear in the cervix there is an opening into the bladder.

These may be closed simply by making a raw surface around the fistula, and closing it with continuous catgut. To get a complete exposure of the opening, it may be necessary to split the cervix at some point.

This method may not be successful if the fistula be difficult of access, and it does not leave the woman free from danger of re-opening at another confinement.

It is therefore better to employ the operation used in the treatment of utero-vesical fistula, next to be described.

6. *Utero-vesical fistulæ.*—For these there can be no doubt that the following method is the best:—A transverse incision is made in the anterior fornix, and the bladder separated from the cervix as far up as is necessary to allow the fistulous tract to be well exposed.

The vesical and cervical portions of the tract are then closed separately with catgut sutures. Afterwards, the wound in the anterior of the fornix is closed.

This method was first employed in this country by Champneys,[2] but it has also been used successfully abroad by Follet,[3] Wölfer,[4] Winternitz,[5] and others.

[1] *Monatschr. f. Geb. u. Gyn.*, 1895, No. 1. s. 8.
[2] *Trans. Obst. Soc. London*, 1888, vol. xxx. p. 348.
[3] *Bull. et ném. de la Soc. de Chir. de Paris*, tome xii. p. 445.
[4] *Deutsche Ges. f. Chir.*, 1887, bd. xvi. s. 144.
[5] *Centralbl. f. Gynäk.*, bd. xix. s. 377.

Addenda.

All these operations should be preceded by the most thorough disinfection of the mucosa of bladder, vagina, and uterus: the strictest antiseptic precautions being observed during the operation.

Catgut is sufficient for all sutures, Lister's chromic gut, Nos. 2 and 3, being serviceable; it should, however, be thoroughly soaked in carbolic lotion (1 to 20) before use. The best needles are Martin's small full-curved variety; his simple needle-holder is also the best.

After the operation it is probably best to drain the bladder, *per urethram*, by a soft metal catheter. One should be used at night and another during the day, the unemployed one being kept in an antiseptic lotion. The catheter must be passed carefully, so as not to tear the wound in the base of the bladder. After five or six days the patient may be allowed to make water at short intervals.

Iodoform pessaries may be introduced daily into the vagina for the first few days; afterwards an antiseptic douche may also be carefully given.

Ammonium benzoate may be given for a week or two by the mouth.